

Waste Disposal and Public Health Risks: A Short Overview

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ABSTRACT

Waste disposal practices have critical implications for environmental quality and public health, particularly in rapidly urbanizing and low-income settings. This article synthesizes evidence on how improper management of municipal, medical, hazardous, and pharmaceutical wastes contributes to disease burden and broader health risks.

Keywords: Waste disposable, Hazard, Public health, Risk, Management

To cite this article: Ismael SS, AAM Saadullah & SA Sultan. Waste Disposal and Public Health Risks: A Short Overview. *Biological Times*. 2026. January 5(1): 11.

Introduction

Improper waste disposal is a major threat to environmental quality and human health, especially in rapidly urbanizing and low-income settings. Solid, medical, hazardous, and pharmaceutical wastes can all create direct disease risks and indirect, long-term health impacts when they are not safely managed [1,2,3,4].

Pathways from Waste to Disease

Open dumping of household and municipal solid waste near homes or in waterways encourages the breeding of mosquitoes, flies, and rodents, increasing vector-borne diseases such as malaria, dengue, and leptospirosis, and infectious diseases like cholera, typhoid, and diarrhea [5,6,7]. Residents living within 100 m of irregular dumps in Pakistan were more vulnerable to malaria, dengue, and asthma than those farther away [3]. Similar patterns are reported in Nigerian and South African communities, where dumpsites are linked to cholera, diarrhea, respiratory infections, and skin diseases [3,7]. Leachate and runoff from dumpsites contaminate surface and groundwater, carrying fecal bacteria, heavy metals, and other toxic substances, leading to gastrointestinal infections, kidney and liver damage, and elevated cancer risks [1,8]. Open burning of mixed waste, including plastics and hazardous fractions, releases toxic fumes and particulate matter, contributing to respiratory problems, asthma, bronchitis, and other cardiopulmonary diseases [6,8].

Medical, Hazardous, and Pharmaceutical Waste

When sharps, bodily fluids, and infectious materials are not separated, cleaned, and disposed of properly, medical and healthcare waste presents unique concerns. Reusing needles and coming into contact with contaminated sharp objects have been associated with HIV, Hepatitis B, and Hepatitis C infections in garbage workers and surrounding communities [2,9]. Dioxins and hazardous chemicals are also released when medical waste is burned outside or burned in a crude manner [2,9].

When hazardous industrial wastes are inadequately handled or disposed of, they deteriorate ecosystems and economies by causing air pollution, water depletion, and widespread human disease [10]. Pharmaceutical waste that is not properly managed contaminates land and water, interferes with aquatic life, and increases antibiotic resistance, which is a major danger to world health [11].

Social, Psychological, and Legal Dimensions

Living close to overcrowded, foul-smelling dumpsites is linked to lower quality of life, mental and emotional stress, and physical illness. Marginalized groups and informal waste pickers bear a disproportionate amount of the burden of waste, which can result in excessive occupational exposure, accidents, and a shorter life expectancy [12,13].

Environmental health laws and regulations are essential for lowering these dangers, but their efficacy is often compromised by infrastructure and enforcement flaws. Waste hazard awareness is frequently low at the community level, and even in cases where it is high, homeowners are forced to use risky disposal methods due to a lack of services and reasonably priced collection [14, 15].

Toward Safer Waste Management

Regular, reasonably priced garbage collection, controlled disposal sites, waste segregation and recycling, and the integration of informal recyclers

into formal systems can reduce environmental contamination and disease risks, according to evidence from a variety of situations. A preventive public health plan must include targeted public education, protective gear and vaccinations for waste handlers, and strong legislative frameworks for hazardous and medical waste [10,11,16].

Conclusion

In conclusion, inappropriate waste disposal poses a serious risk to both the environment and public health. The danger of infectious infections, accidents, respiratory issues, and contamination of water, soil, and air is increased by open dumping, burning trash, and poor handling of domestic and medical waste. These effects are particularly bad in low-income, highly populated areas with few garbage services.

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